

Social Sciences' Learning Outcomes: Mapping Course Intended Learning Outcomes to Computer Science Undergraduate Student Outcome

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ABSTRACT

The purpose of this study is to determine the contribution of the Social Science courses to the attainment of the Student Outcome (SO) in the BSCS programme. This study made use of the descriptive research method. The respondents were the BSCS students enrolled in 3rd Trimester SY 2012-2013 in Social Sciences courses. Weighted mean was used to analyze the responses of the BSCS students and the Five-Point Likert Scale, was also utilized in the interpretation of the data. The result of the study showed that: the student respondents are in agreement to the attainment of the DSS courses to the student outcome of the Bachelor of Science in Computer Science (BSCS) programme. Statistical Analysis using Pearson Product Moment Correlation proved a significant relationship of the social science courses to the BSCS programme. Likewise, the students agree that social science courses give the student sufficient background in understanding roles of individuals and society. There is a significant relationship between social science courses intended learning outcomes with the BSCS student outcome therefore Social Science courses are important to the development of the skills that the BSCS should obtain for them to become an asset of society.

Keywords: Course mapping, curriculum, student outcome, programme

INTRODUCTION

Educational institutions worldwide are founded on the objective that quality education focused on the development of various traits. The mission of AMA International University –Bahrain (AMAIUB) is to provide holistic, relevant, quality and globally recognized IT-based education and trainings in all levels and disciplines. The objective is to produce professionals and leaders responsive to the needs of science and the international community. It recognizes the welfare and benefits of men and women with the realization of their potentials as productive members of society (AMAIUB- Student Handbook SY 2011-2012.)

A report conducted by World Bank (2007) further strengthened the role of education in the minds of the young stated that “Over the last 10 years growth research has been able to demonstrate that the quality of education, has a statistically significant and important positive economic effect and that ignoring the quality of education limits economic growth.

Any institutions adopt certain technique which is the use of learning outcome. A learning outcome refers to the specific ability, skill or behavior that a student is expected to demonstrate upon completion of a course. Learning outcome is also interchangeably use with program outcome or student outcome.” ABET one of the accrediting bodies for computing and engineering refer to learning outcome as student outcome.

ABET (2012) defines Student Outcomes as the totality of students learning and this can be done after completion of a degree. This encompasses the different skills and behavior that the students manifest after completion of the program.

The social sciences include courses on Philosophy, Psychology, Humanities, Logic, History, Arabic Studies and Sociology. These are of low importance subjects and students even question the significance of these courses to their curriculum. They even view that social Science courses merely transmit information because they are too centered on the content of the course without even realizing the value of the said courses (Teaching of Social Sciences, 2006).

One of the program offerings of AMAIUB is BSCS. The BSCS curriculum includes Social Science courses. These courses are mapped to the BSCS student outcomes. Each of the social science courses has its own CILO (Course Intended Learning Outcome) which are used as basis for the attainment of the SO(student outcome). These CILOS are assessed by the students enrolled in the course at the end of the trimester. There is a need to determine the contribution of the said courses to the entire BSCS curriculum by letting the students evaluate the extent of the attainment of the student outcomes after taking the Social Science courses.

OBJECTIVES OF THE STUDY

This study aims to determine the contribution of the social sciences in the attainment of the BSCS student outcome. Specifically, it seeks to answer the following:

1. What is the assessment of the BSCS students on how the Social Sciences CILO's laid the foundation for the attainment of the Student Outcome of the BSCS curriculum in terms of the following courses:
 - 1.1 History of Bahrain;
 - 1.2 Introduction to Philosophy;
 - 1.3 Humanities (Art, Man, and Society);
 - 1.4 World History;
 - 1.5 Arabic Studies;
 - 1.6 General Psychology; and
 - 1.7 Sociology
2. Is there a significant relationship between the Social Sciences CILO's and the Student outcome of the BSCS programme?

THEORETICAL FRAMEWORK

This study is anchored with ABET (Accreditation Board for Engineering and Technology). The BSCS has an existing curriculum; however, its courses have been aligned vis –a- vis the ABET standard. ABET functions as the primary provider of quality innovation in computing, engineering, and technology. It also acts as a consultative body to assist in the global development and advancement in education through communication and collaboration. Further, it foresees the dynamics of the educational system. ABET describes Student Outcomes as the totality of what would be the students' manifestations of learning after graduation. Student outcomes should be well defined for the realization of the expectations to achieve the performance indicators. Performance indicators represent the knowledge, skills, attitudes or behavior students should be able to demonstrate by the time of graduation that indicate competence related to the outcome.

The social science as preparatory courses provides students with skills and information in a broader perspective. As stated in the BSCS curriculum plan 2012-2013, each of the student characteristics, as expressed in student outcomes a) through k), is addressed in at least one course. Each course has a set of intended learning outcomes which guide the faculty members

in the course of delivery. These CILO's (Course Intended Learning Outcomes) are mapped against the SO's (Student Outcomes.) Attaining the CILOs enables the student to attain the corresponding SOs. Hence, a well-designed curriculum for the attainment of all SOs. The SO (Student Outcome) that is being addressed by the DSS courses to the BSCS students as identified by ABET is SO (Student Outcome) letter e. which states, "an understanding of professional, ethical, legal, security and social issues and responsibilities." This Student Outcomes "d" to "h" are essentially soft skills that prepare graduates to extend their knowledge so that they can practice as successful computing professionals for the advancement of society (BSCS curriculum plan 2012-2013).

The Course Intended Learning Outcomes (CILOs) of the Social Sciences courses was analyzed and BSCS students evaluated the contribution of these courses to the attainment of their student outcome.

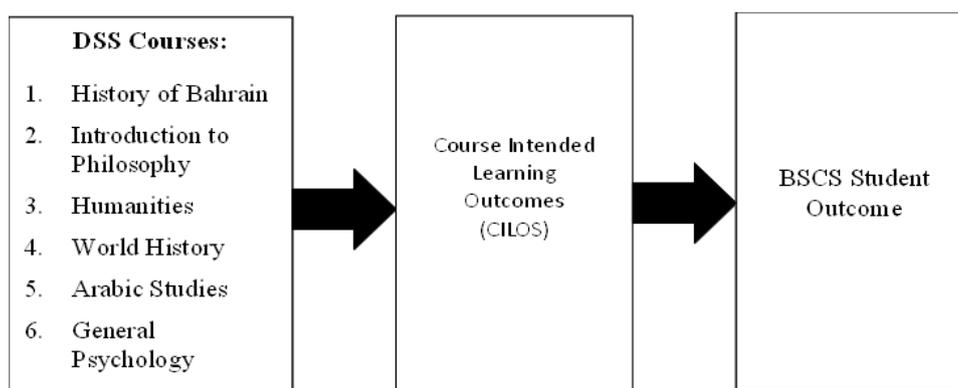


Figure 1. Social Sciences' Learning Outcomes: Mapping Course Intended Learning Outcomes to Computer Science Undergraduate Student Outcomes

LITERATURE REVIEW

Stanley (2009) defined traditional liberal arts in his keynote address "The Humanities in Hard Times" to be a critical thinking, civic and historical knowledge and ethical reasoning; humanities support this contention. The faculties for personal, growth and preparation lie in free democracy, regardless of career choice. He amends that the mission of humanities is curatorial and that it preserves what has been traditional in culture and critical.

There are three validations on the significance of Social Sciences courses to humanity. The first deals on the society as a whole demands liberally educated people if it is to compete in the global economy. Second is on the people participating and contributing responsibly in a democratic society. Third will be validation of the liberal education which deepens and enriches individual experience. We cannot live worthy lives without physics, nor can we live virtuous lives in the absence of humanities and history Delblanco (2009).

It is imperative to reestablish the impact of the social sciences. Its growing relevance for a career in the fast enlarging service sector, plays a pivotal role. This contention is backed up by a blog published in the website (2007), "Importance of Social Science" stating that,

"The objective of social science is to watch where the society has been heading and what more can be done to benefit the entire race. Based on historical accounts, we discover that social science has been a continuous share of the development of the human race. It is fascinating to know that great philosophers like Aristotle and Plato were supporters of social science and their philosophies are based on the objectives of social sciences only."

The teaching of social sciences is important as a normative responsibility (NCERT, 2006). Thus social science teaching basically aimed to investigate moral and mental energy. This will provide critical thinking ability focused on the social values.

The social sciences are perceived as non-utility courses resulting to low self-esteem. The initial stage of schooling often suggests that the natural sciences dominate social sciences. Therefore, there is a need to emphasize the essentiality of social sciences. This provides provision for social, cultural, and analytical skills. It is important to inculcate the increasing relevance of social sciences for employment.

The above statement pointed out the importance of the social sciences subjects in the attainment of the BSCS curriculum. A study conducted by the NCSS(2006) which underscores the significance of refining students who are dedicated and committed to the ideas and values of democracy. The emphasis is on the essentiality of social sciences to provide varied skills. These are important in dealing with the realities of the world. It also deals with political and economic realities. It inculcates the importance of the social sciences in increasing its relevance for job opportunity. It lays the foundations of an analytical and creative mind. The present study specifically focuses on the attainment of the BSCS student outcomes. This shows the relevance of the Social Sciences in the curriculum. These related studies dealt on the diversified programs offered in the educational institutions.

METHODS

Respondents

The respondents of the study were the BSCS students enrolled in 3rd Trimester SY 2012-2013 in Social Sciences courses.

Data Collection Instrument

This study made use of the descriptive research method, where a questionnaire was used to determine the relevance of the social science courses in the BSCS curriculum by evaluating the BSCS student outcome. The questionnaire was used as the research instrument to elicit information on the attainment of BSCS student outcome, which served as the basis of determining the relevance of the Social Science courses in the BSCS curriculum.

Weighted mean was used to analyze the responses of the BSCS students and the Five-Point Likert Scale, was also utilized in the interpretation of the data. Pearson Product Moment Correlation was used to find out significant difference on students' responses based on courses. The test of hypothesis is at 0.05 level of significance.

RESULTS AND DISCUSSIONS

Table1(Part-I). History of Bahrain CILOs mapping with BSCS student outcome

<i>Course Intended Learning Outcomes</i>	<i>Mean</i>	<i>Descriptive Interpretation</i>
A1: Describe the stages of development of the kingdom of Bahrain and the Gulf Region from pre-history up to the present; and	4.49	Agree
A2: Identify and describe historical places and personalities of Bahrain.	4.49	Agree
B1: Present the positive influences of the administration by the Ruling Family in the light of the current situation and;	4.22	Agree
B2: Cite geographical locations and show the boundaries of Bahrain.	4.22	Agree

Table1(Part-II). History of Bahrain CILOs mapping with BSCS student outcome

<i>Course Intended Learning Outcomes</i>	<i>Mean</i>	<i>Descriptive Interpretation</i>
C1: Assess the historical developments of the Kingdom of Bahrain; and	4.31	Agree
C2: Identify and illustrate ways in which individuals and groups contributed to the growth and development of the Kingdom and the region.	4.04	Agree
D1: Lead group discussions on special topics pertaining to the present situation of Bahrain; and	4.31	Agree
D2: Organize and evaluate historical social issues, and form conclusions.	4.18	Agree
Weighted Mean	4.28	Agree

Table 1 presents the course intended learning outcomes of History of Bahrain.

With a weighted mean of 4.28 the students agree that the student outcome of BSCS has been attained. It shows that the students have imbibed the importance of studying History of Bahrain. Students agree that student outcome on social issues and responsibilities have been incorporated in their History of Bahrain lessons. All the CILO's yielded the same status of attainment which is "Agree"

Table 2 presents the course intended learning outcome of Introduction to philosophy mapped with BSCS student outcome.

With the weighted mean of 4.20 which was interpreted as "Agree". The course intended learning outcomes of Introduction of Philosophy all yielded "Agree" this can also be inferred that the students agree that the student outcome of BSCS in the said subject has been attained. The CILO B1 revealed a highest mean of 4.31.

Table 2. Introduction to Philosophy CILOs mapping with BSCS student outcome

<i>Course Intended Learning Outcomes</i>	<i>Mean</i>	<i>Descriptive Interpretation</i>
A1: Demonstrate familiarity with major concepts, theoretical perspectives, empirical findings a historical trends in philosophy;	4.20	Agree
A2: recognize and respect human perspectives, notions and opinions regarding things and understand that philosophical explanations may vary from one person and culture to another	4.13	Agree
B1: Ability to apply knowledge of philosophical theories in their day to day activities	4.31	Agree
B2: Ability to justify and defend personal views once they are clearly and completely stated;and	4.20	Agree
C1: Ability to recognize and critically evaluate arguments;	4.22	Agree
C2: Ability to analyze philosophical essays and obtain facility in clear, complete and methodical statement of personal views	4.11	Agree
D1: Ability to think critically at all times;	4.24	Agree
D2: Ability to apply philosophical thinking to moral issues that concerns their employment.	4.20	Agree
Weighted Mean	4.20	Agree

With the weighted mean of 4.20 which was interpreted as “Agree”. The course intended learning outcomes of Introduction of Philosophy all yielded “Agree” this can also be inferred that the students agree that the student outcome of BSCS in the said subject has been attained. The CILO B1 revealed a highest mean of 4.31

Table 3. Humanities (Art, Man and Society) CILOs mapping with BSCS student outcome

<i>Course Intended Learning Outcomes</i>	<i>Mean</i>	<i>Descriptive Interpretation</i>
A1: Identify and discuss the different forms of arts;	4.33	Agree
A2: Recognize the various factors that contribute to the understanding of a work of art.	4.22	Agree
B1: Interpret the symbol or meaning of a particular work of art;	4.22	Agree
B2: Explain the important roles that arts play in making the world a more interesting and habitable place.	4.22	Agree
C1: Examine the various forms of arts and the different factors that that contribute to the understanding and appreciation of a particular work of art;	4.07	Agree
C2: Critique a particular work of art by making an oral/written critical analysis or judgment.	4.13	Agree
D1: Manifest skills in producing creative outputs in all assigned tasks;	4.27	Agree
D2: Apply knowledge of humanities in facing and understanding life's day-to-day challenges;	4.31	Agree
Weighted Mean	4.22	Agree

Table 3 shows the status of attainment of the course intended learning outcomes of Humanities (Art, Man and Society) to the BSCS student outcome. With a weighted mean of 4.22 the students agree that the student outcome of BSCS has been attained. All the CILO’s yielded the same level of agreement which is “Agree”. CILO A1 recorded a highest mean of 4.33 CILO’s A2 and B1 registered a mean of 4.22.

Table 4. World History CILOs mapping with BSCS student outcome

<i>Course Intended Learning Outcomes</i>	<i>Mean</i>	<i>Descriptive Interpretation</i>
A1: Describe the historical development of man from the pre-history to the modern period;	4.22	Agree
A2: Recognize and respect cultural diversity of each civilization	4.09	Agree
B1: Distinguish the influences of the people from the pre-historic period to the present-day period.	4.42	Agree
B2: Express important lessons and values that can be derived from historical figures and events	4.31	Agree
C1: Analyze and examine historical events, cultures, religious beliefs, practices and traditions;	4.31	Agree
C2: Identify and illustrate ways in which individuals and groups contributed to changes in social conditions.	4.27	Agree
D1: Apply skills in story telling on the relations between past and present events to illuminate present-day issues geared for the need to engage in life- long learning;	4.13	Agree
D2: Ability to organize, evaluate current social issues, form conclusions and communicate effectively in an informed opinion.	4.29	Agree
Weighted Mean	4.26	Agree

Table 4 displays the World History CILOs mapped with BSCS student outcome. The data reveals a weighted mean of 4.26 which is interpreted as “agree.” In general the students agree that BSCS SO (Student Outcome) which is the understanding of professional, ethical, legal, security, and social issues and responsibilities has been attained. The CILO B1 revealed the highest mean of 4.42 which is interpreted as agree.

Table 5. Arabic Studies CILOs mapping with BSCS student outcome;

<i>Course Intended Learning Outcomes</i>	<i>Mean</i>	<i>Descriptive Interpretation</i>
A1: Use major concepts in Arabic Studies to discuss language, culture, and literature;	4.33	Agree
A2: Elaborate on vision or central theme and manner of presentation or writing when discussing major literary works.	4.09	Agree
B1: Apply knowledge of literary analysis to specific selections of Arabic literature;	4.24	Agree
B2: Gain skills in asking interesting, productive and insightful questions on Arabic language, culture and literature.	4.24	Agree
C1: Creative thinking skills essential to writing literary pieces;	4.18	Agree
C2: Analytic skills toward valuing the positive features of the Arab socio-cultural tradition.	4.18	Agree
D1: Narrating the history or historical development of the Arabic literary-cultural tradition;	4.20	Agree
D2: Writing about major personalities or luminaries in the Arab World.	4.29	Agree
Weighted Mean	4.22	Agree

Table 5 reveals the status of attainment of Arabic Studies CILOs to BSCS SO. With an overall weighted mean of 4.22 which is also true with Humanities the students agree that ARABIC studies CILOs likewise attained the ethical, social issues and responsibilities of BSCS SO (Student Outcome). CILO D2 showed a mean of 4.29 which is still interpreted as “agree”. Both CILOs B1 and B2 displayed a mean of 4.24.

Table 6. General Psychology CILOs mapping with BSCS student outcome

<i>Course Intended Learning Outcomes</i>	<i>Mean</i>	<i>Descriptive Interpretation</i>
A1: Students will get acquainted with and appreciate the basic and practical psychological concepts.	4.11	Agree
B1: Students will differentiate the domains of psychology as observed in the field.	3.98	Agree
C1: Students will illustrate and analyse the psychological concepts in the context of their roles, relationship, and responsibilities with the self and society.	4.13	Agree
D1: Plan, implement, and evaluate their personal goals and human development by applying the psychological concepts. Students will also develop essential skills in research such as reading, taking notes, and data critical analysis.	4.24	Agree
Weighted Mean	4.12	Agree

Table 6 presents the General Psychology CILOs mapping with BSCS student outcome.

With the weighted mean of 4.12 which is the lowest weighted mean among DHSS courses it can be gleaned that students still agree that General Psychology CILOs had achieved the BSCS Student Outcome. The CILO D1 yielded the highest mean of 4.24 while CILO B1 received a lowest mean of 3.98 which is still interpreted as “agree”.

Table 7. Sociology CILOs mapping with BSCS student outcome

<i>Course Intended Learning Outcomes</i>	<i>Mean</i>	<i>Descriptive Interpretation</i>
A1: Identify and describe the nature, origin, and development, sociological perspective, forerunners, and theories in sociology;	4.47	Agree
A2: State the significance of studying sociology	4.38	Agree
B1: Summarize the various social groups, organizations, and institutions in society;	4.31	Agree
B2: Compare and contrast cultures, religious beliefs, practices and traditions.	4.31	Agree
C1: Demonstrate and evaluate different social institutions, social groups and social control concomitant theoretical and conceptual frameworks;	4.36	Agree
C2: Write a reaction paper on the different social issues in a social groups, institutions and organizations.	4.38	Agree
D1: Utilize social science research skills and apply this in investigating social issues;	4.33	Agree
D2: Conduct actual field interviews on current social issues and interpret the data gathered.	4.56	Strongly Agree
Weighted Mean	4.39	Agree

Table 7 displays the Sociology CILOs mapped with BSCS student outcome. The data reveals a weighted mean of 4.39 which is interpreted as “agree”. CILOD2 revealed the highest mean of 4.56 which is interpreted as “strongly agree”. This can be disclosed that students value how people view the world which comes from what they learn in their everyday activities which is also essential contribution of the course.

Table 8 (Part-I). Relationship between the Social Sciences CILO’s and the Student outcome of the BSCS programme

<i>DSS Course Intended Learning Outcomes</i>	<i>BSCS Student Outcomes</i>	<i>Decision</i>	<i>Interpretation</i>
History of Bahrain	Pearson Correlation	.473	Moderate degree of correlation
	Sig. (2-tailed)	.001*	
	N	45	
Introduction to Philosophy	Pearson Correlation	.581	Moderate degree of correlation
	Sig. (2-tailed)	.000*	
	N	45	
Humanities	Pearson Correlation	.574	Moderate degree of correlation
	Sig. (2-tailed)	.000*	
	N	45	

Table 8(Part-II). Relationship between the Social Sciences CILO's and the Student outcome of the BSCS programme

<i>DSS Course Intended Learning Outcomes</i>		<i>BSCS Student Outcomes</i>	<i>Decision</i>	<i>Interpretation</i>
World History	Pearson Correlation	.758	Significant	High degree of correlation
	Sig. (2-tailed)	.000*		
	N	45		
Arabic Studies	Pearson Correlation	.521	Significant	Moderate degree of correlation
	Sig. (2-tailed)	.000*		
	N	45		
General Psychology	Pearson Correlation	.374	Significant	Moderate degree of correlation
	Sig. (2-tailed)	.011*		
	N	45		
Sociology	Pearson Correlation	.499	Significant	Moderate degree of correlation
	Sig. (2-tailed)	.000*		
	N	45		

* Correlation is significant at the 0.05 level (2-tailed).

Table 8 shows the relationship between the Social Sciences CILOs and the student outcome of the BSCS programme. The table reveals that the Humanities and Social Sciences CILOs is significantly related to BSCS student outcome letter “e” which is an “*understanding of professional, ethical, legal, and social issues and responsibilities*”. It is said that the general education courses particularly DSS (Department of Social Sciences) give the students’ sufficient background in understanding roles of individuals and society. This finding rejects the null hypothesis of no significant relationship between the DSS CILOs and BSCS student outcome. Thus, it can be gleaned that the BSCS curriculum is a combination of both the technical and professional requirements in general education. Specifically, DSS courses prepare for the students’ professional career in computing relevant in the modern society.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the study, the following conclusions are formulated: The respondents are in agreement to the attainment of the BSCS student outcome which is understanding of professional, ethical, legal, security, and responsibilities. Likewise, the students agree that social science courses give the students sufficient background in understanding roles of individuals and society. There is a significant relationship between humanities and social sciences course intended learning outcomes with the BSCS student outcome therefore Social Science courses are important to the development of the skills that the BSCS students should obtain for them to become an asset of society.

The findings reported in this study validate the contribution of the humanities and social science courses to the BSCS programme. AMAIU-Bahrain must continue the inclusion of humanities and social sciences courses to the BSCS programme which are significant requirements to prepare students for a professional career and for better functioning in modern society. It is therefore hoped, that this study will serve as resource materials for students, educators, curriculum planners, school authorities for them to be able to realize the significance and importance of the social sciences courses across colleges. In the process of serving the educational system, educators, curriculum planners and school authorities should

continuously revisit content and pedagogy for the improvement of the curriculum and at the same time they would be able to determine the content of the social science courses to support the attainment of the student outcome of the various programme. Concomitantly, it is necessary to conduct another research study using the same variables in other colleges in AMAIU-Bahrain and other educational institutions to justify the findings of this research.

REFERENCES

- [1] ABET- Assessment: Defining Student Outcomes (2012). www.abet.org
- [2] AMAIU-BAHRAIN BSCS Curriculum Plan (2012-2013). Salmabad, Kingdom of Bahrain
- [3] An informative blog on Science and Technology. (2007.) “The Importance of Social Science”
- [4] Delbanco (2009). *The Importance of Social Science*. <http://science-and-technology.blogspot.com/2007/09/importance-of-social-science.html>
- [5] National Curriculum Framework for School Education (2000). NCFSE www.socscienotes.com
- [6] National Curriculum Standards for Social Studies: Executive Summary (2006). www.ncsss.com
- [7] Katz, S. N. (2009). *The Humanities in Hard Times*. https://www.princeton.edu/~snkatz/papers/keynote_04-18-09.pdf
- [8] Teaching of Social Sciences (2006). National Council for the Social Science NCSS www.socscienotes.com
- [9] World Bank Report (2007). On Education www.socscienotes.com